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UNDERSTANDING INSTITUTIONAL COORDINATION IN FLOOD DISASTERS: EARLY WARNING COMMUNICATION AND RESPONSE

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Abstract

Recurrent gaps in institutional coordination and early warning communication, despite formal disaster management structures, are exposed along the Chenab River in District Chiniot, Punjab. There is little empirical research on the manner in which warnings go through institutions and communities as well as the barriers to effective local response. This qualitative case study involved the exploration of institutional coordination, early warning dissemination, and flood response mechanisms in Tehsil Lalian, Chiniot, through the lens of village heads (Namberdars). Six purposely selected Namberdars were interviewed semi-structured with firsthand experience of major floods in 2013, 2014, and 2025. Thematic analysis in NVivo 14 was used to analyze the data guided by a 6-theme coding scheme: Role and Experience, Flood Impact, Early Warning Communication, Institutional Coordination and Response, Community Preparedness, and Recommendations. A fundamental dilemma came up: the rapid, disciplined evacuation of Rescue 1122 (IR-RP, n=6) and inter-agency field coordination (IR-CG, n=6) was celebrated, whereas District Government relief (IR-DG, n=6), including 4+ days of delays in food distributions, insufficient quantities, and out-of-date beneficiary lists, was condemned. The warnings were timely (24-72 hrs) but frequently technical in nature (e.g., 3.5 to 10 lakh cusec), and there were frequent network failures and no pre-flood awareness campaigns (EW-AG, n=4). The best dissemination and response channels were mosque loudspeakers and youth volunteer teams (EW2, CP-CI, n=6). The most vulnerable groups, widows, the aged, tenants, and the landless labourers, were disproportionately impacted (FI-VG, n=6). Chiniot has high horizontal coordination to rescue and low vertical integration to provide relief and risk communication. The results follow the principle of early warnings to all that all four elements of FEWS should be interrelated. Among other recommendations, it is proposed that pre-positioning food at the Union Council level, localizing the warnings in Punjabi, annually updating the vulnerable household data, and institutionalizing pre-monsoon joint training between Namberdars, Rescue 1122, and District Administration.

INTRODUCTION

Among the most common and devastating climate-related risks in the world, floods are on the rise, with their frequency and intensity being enhanced by climate change, unplanned development, and hydrological pressures. The floods of monsoon in Pakistan have consistently upset rural livelihoods in the country, destroyed

infrastructure, and overwhelmed the local disaster management organizations. An example of this vulnerability is District Chiniot, which is along the Chenab River in Punjab. In 2013, 2014, and 2025, the district has encountered major floods, which have revealed critical failures in institutional preparedness and response despite the presence of formal disaster management structures (Kapucu, 2006; Ansell et al., 2010).

Four interrelated components of Early Warning Systems (EWS) are necessary to effectively reduce flood risks: risk knowledge, monitoring and forecasting, warning dissemination, and response capabilities. When these parts are working in harmony, EWS has the potential to save lives and minimize economic losses. Nonetheless, the efficacy of any EWS is not just defined by technical accuracy but also by institutional coordination, community trust, and timely communication to the vulnerable groups.

In Pakistan, gaps in multi-agency integration, resource limitations, and timely dissemination of warnings have been consistently identified as barriers to flood preparedness in policy reviews in Pakistan. The floods that have occurred in the Khyber Pakhtunkhwa region and Punjab in recent years have further increased the scrutiny of the disaster governance by the society. An example is the 2025 Swat tragedy that resulted in disciplinary action against 14 officials of the District Administration, Irrigation, Local Government, and Rescue 1122 departments following a provincial inquiry that found systemic failures in early warning, coordination, and response. Concerns have been raised likewise in Punjab, where the report of the 2025 Flood Forecasting Division described the monsoon season as a complex and cascading disaster due to heavy rainfall, glacial melt, and synchronized reservoir releases.

Though Rescue 1122 is generally regarded as the main contributor to the overall response effectiveness, operational reviews show that lack of coordination, outdated beneficiary data, and delays in the delivery of relief remain as the main factors affecting the overall response effectiveness. Socio-cultural barriers to these issues include the following: warnings are too technical to be understood locally, failure of mobile network coverage to carry SMS alerts, and weak consistency in pre-flood awareness campaigns.

Across the world, the powerful obstacles to EWS governance include ineffective communication, absence of community involvement, and political instability. The South Asia region has been trying to address these gaps through the implementation of initiatives such as the roadmap of Early Warnings to All and UN-supported hydro-meteorological coordination, but the implementation of these programs at the district level remains uneven. Recent investments in real-time dashboards, drones with thermal-imaging cameras, and Safe City CCTV feeds signal a transition in flood-monitoring efforts towards technological solutions, but their application with village-level dissemination and inter-agency response is still in development.

Considering these dynamics, there is an urgent need for field-based qualitative evidence on how the early warning of floods is actually generated, communicated, and acted upon in District Chiniot. Aspects of national policy or technical modelling have been well researched, whereas little attention has been given to the lived realities of coordination between Rescue 1122, district administration, and the community actors such as Namberdars. It is important to understand these local pathways so as to translate provincial mandates into effective, community-based action. This research thus looks at institutional coordination, communication channels, and operational barriers in the flood response in Chiniot using firsthand insights of key stakeholders to inform more resilient and inclusive disaster management practices.

Scope of Study

This research is on the institutional coordination, early warning communication, and flood response in Tehsil Lalian, District Chiniot, Punjab, Pakistan. Its geographic area is restricted to six flood-prone villages in Tehsil Lalian, which were directly impacted by major floods in 2013, 2014, and 2025. These villages were chosen because of their location near a river (Chenab

River), frequent occurrence of riverine floods, and active presence of both formal (Rescue 1122, District Administration, and Revenue Department) and informal village leadership (Namberdars).

The population range is limited to Namberdars as the key informants. Namberdars were selected as they act as boundary spanners in the state and community during disasters, as they are responsible in relaying warnings, coordinating evacuations, and checking lists of beneficiaries of relief. Other stakeholders like District Administration officials, Rescue 1122 staff, or affected households would not be included in the study to ensure depth in analysis on the village leadership perspective. The study has six participants, and so the emphasis of the study is rich and contextualized data as opposed to statistical generalizability, which is typical in a qualitative case study design.

The temporal scope is focused on the major flood events of 2013-2025, with primary data being collected in March-April 2026. References fall within 2023-2026 to place findings in the context of current Flood Early Warning Systems (FEWS) governance discourses, such as the UNDRR and WMO "Early Warnings of All" framework (UNDRR, 2023; WMO, 2018).

In this work, there is no evaluation of technical aspects of flood forecasting models, GIS/remote sensing precision, or hydraulic engineering interventions. It does not quantitatively measure the economic losses or make a comparison between Chiniot and other districts. The results are context-dependent to Tehsil Lalian and cannot be generalized to the urban flood context or districts with other institutional structures. The emphasis on self-reported perceptions implies that the study records the experience of coordination instead of making an operational audit of the agencies.

LITERATURE REVIEW

Role and Experience of Local Leadership in Flood Management

Local intermediaries, including village heads, chiefs, or Namberdars, are an under-researched but important part of disaster risk communication. They play the role of boundary spanners, who can transform technical warnings into information that can be acted upon in the community, as well as mobilize community resources. Recent governance studies of Flood Early Warning Systems (FEWS) emphasize that dominant barriers are not only technical but also social and institutional, such as the absence of inclusion of local actors in formal protocols (Maskrey et al., 2019; Basher, 2006). Community-based models of disaster risk management (CBDRM) in South Asia increasingly place the village-level leader in the first line of contact in both warning dissemination and needs assessment. The systematic reviews in the Western Balkans also add that although GIS and remote sensing are used to better map risks, it is the human-driven development and poorly designed interventions that result in the fact that the local knowledge that is held by the community leaders is the same knowledge that is essential in putting the forecasts into perspective. In Pakistan, provincial policy on disaster assigns the Namberdars coordination responsibilities in case of emergencies, although there is a dearth of empirical research on the exercise of such roles by the Namberdars in the villages of Chenab River.

Flood Impact: Community, Livelihoods, and Vulnerable Groups

The socio-economic status, type of housing, and access to information are differentiators of the impact of floods. Bangladesh's quantitative evidence shows that even 1-3 days of early warnings can decrease property losses in households by up to 30 percent, which affirms the economic worth of effective communication. But landless farmers, women-headed families, the elderly, and the disabled are the people most likely to suffer losses since they do not have savings, storage, or mobility to evacuate. In Punjab, the 2025 Flood Forecasting Division described the monsoon as a complex and cascading disaster damaging crops, housing, and link roads with cascading impacts on the daily-wage workforce. FEWS are considered globally as interconnected systems where risk knowledge and response capabilities need to consider

differentiated vulnerability (Ali et al., 2025). Lack of disaggregated data on vulnerable populations in warning and relief planning is also a common obstacle identified in the FEWS governance literature.

Early Warning Communication: Channels, Timeliness, and Gaps

The warning dissemination element of FEWS focuses on communicating risk information on governance scales. A 2023-2024 study demonstrates that there are three unresolved problems:

1. Channel multiplicity vs. reliability: At the same time when district administrations use SMS, WhatsApp groups, phone calls, and loudspeakers of police, mobile network failures during heavy rain interfere with delivery. Citizen science models in Central Java enhanced continuity through school-based rain gauges and student recording, which ensured continuity when networks were down (Buytaert et al., 2014).
2. Timeliness vs. comprehensibility: Warnings can be given 24-72 hours in advance, but such technical terms as 3.5 to 10 lakh cusec are not actionable by the villagers unless translated into the anticipated water levels. According to UNDRR and WMO (2023), all the components of FEWS should be interconnected and efficient, or the forecast-to-action chain will be broken.
3. Awareness gaps: A review of the literature on the subject has identified the following to be barriers to the effectiveness of EWS: social and cultural barriers, socio-economic disparities, and lack of community involvement. In a 2023 mixed-methods study of residents of Malaysia, the researchers found that residents were dependent on informal social media because of the lack of knowledge about the official FEWS (Reuter & Kaufhold, 2018). Other instances of this type of lapse in warning and response were reported in Pakistan after high-profile failures, such as the 2025 Swat incident that led to disciplinary measures being taken against 14 officials (NDMA, 2023; UNDRR, 2023).

Institutional Coordination and Response

Inter-agency coordination is important to respond to floods before, during, and after. Interpretive structural modeling was used by Samansiri et al. (2023) to identify critical failure factors in FEWRS, such as bureaucratic inertia, unclear mandates, and poor data sharing. Policy reviews in Pakistan emphasize the necessity of implementing multijurisdictional integration; however, the weak coordination and slowness in responding remain vulnerable. The Punjab Flood Forecasting Division report of 2025 recommended the sharing and integration of real-time trans boundary data but indicated that institutional protocols to use this data were still being developed.

Rescue 1122 is always recorded as the front-line agency in evacuation and medical assistance with high public approval of its field operations (Zaidi et al., 2020). But there arise coordination gaps in the last mile of relief: outdated lists of beneficiaries, and delays in food distribution by district governments. Regional efforts such as the South Asia Hydromet Forum and the FEWS coordination meetings in Balochistan facilitated by the UNESCO demonstrate that organized inter-agency platforms enhance preparedness (WMO, 2021), but these platforms are yet to be institutionalized in all the districts in Punjab.

Community Preparedness and Participation

The response capabilities element of FEWS obliges that social groups and actors be ready to react to cautions. Recent literature is changing the top-down preparedness approach to participatory models. Indonesian citizen science showed that putting rainfall monitoring in elementary schools enhanced cat disaster literacy and data continuity (Alfieri et al., 2012). In Bangladesh, early measures of harm by communities, even in the presence of institutional warnings, demonstrated that accessibility and local interpretation are the determinants of outcomes (Cools et al., 2016; Basher, 2006). However, obstacles still exist: mainstream FEWS governance research finds that communities lack trust in or do not pay attention to official warnings because of lack of

inclusive planning and political instability. In Chiniot, as reported by Namberdars, preparedness includes informal evacuation routes and volunteer boat teams but does not include designated shelters, grain storage, and pre-positioned relief.

Recommendations: Improving EWS and Coordination

In the literature of 2023-2026, five strategies can be identified that recur:

1. Pre-positioning of resources at the union council level to minimize delays in distributing resources.
2. Localizing and simplifying warnings and converting them into local languages and visual flood maps.
3. Making it a norm to conduct joint training between Rescue 1122, District Administration, and Namberdars prior to the monsoon.
4. Renewing susceptible domestic information on an annual basis to avoid exclusion mistakes.
5. Combining GIS/RS with community-based knowledge to provide the so-called forecasting of how flood risk may evolve.

The UNDRR & WMO (2023) "Early Warnings for All" framework reinforces that risk knowledge, monitoring, dissemination, and response must be equally strengthened, with regular cross-sector review.

Hypothesis

The working hypotheses used in this exploratory qualitative study based on the research questions and gaps in the literature are as follows:

H1: Although Rescue 1122 and District Administration play the required role of flood evacuation, there are gaps in the inter-agency coordination in rescuing the people and creating awareness on the upcoming flood.

H2: Flood early warnings in Chiniot are produced using various institutional channels, but their effectiveness is lowered due to the use of technical language, network failures, and lack of localization.

H3: Community perceptions of institutional response are positive towards the rescue operation and negative towards relief governance, indicating a disconnect between institutional activity and public needs.

H4: Enhanced pre-monsoon coordination mechanisms, localization of warning content, and an update of beneficiary data will enhance the perceived effectiveness of flood management in Chiniot.

THEORETICAL FRAMEWORK

The basis of this study is that there are two complementary frameworks:

The four components of flood early warning systems (UNDRR & WMO, 2023)

According to the United Nations Office on Disaster Risk Reduction, effective FEWS is defined as an interrelated system of (1) risk knowledge—systematized data collection and risk assessment; (2) monitoring and forecasting—hazard detection and forecasting; (3) warning dissemination—communication of risk information across scales; and (4) response capabilities—preparedness of institutions and communities to act. The framework assumes that failure of one of the parts compromises the whole system. The four-component model is used in this research to plot the location of the success or failure of coordination in Chiniot.

Inter-organizational coordination theory in managing disasters

Based on the article by Samansiri et al. (2023), the disaster response is perceived as a system of organizations, the effectiveness of which depends on the frequency of communication, interdependence of resources, clarity of roles, and trust. The factors that can be considered as critical failures are bureaucratic inertia, lack of clarity as to the mandate, and absence of data sharing (Kapucu, 2006; Ansell et al., 2010). The framework can be used to explain why horizontal coordination (Rescue 1122–Namberdar–Army) can be successful and why vertical coordination (district government–community relief) fails.

Collectively, these frameworks place the findings within global FEWS governance arguments as well as explain local institutional processes in Punjab. This paper has explored the issues of

institutional coordination and early warning communication in the event of floods in Tehsil Lalian, District Chiniot, through the lived experiences of six Namberdars. Findings show that there is a two-fold reality: (1) Operational excellence in life-saving response with Rescue 1122, the army, and village leadership showing rapid and coordinated evacuation supported by timely multi-channel communications; and (2) Systemic gaps in the last mile of disaster governance reflected by delayed food delivery, outdated beneficiary data, absence of pre-flood awareness, and translation of technical warnings not into local language.

The findings are applicable to 2023–2026 literature on FEWS governance because the authors demonstrate that coordination failures do not occur consistently across the stages of a disaster. In Chiniot, the response component is functioning well, yet the risk knowledge and warning dissemination are functioning partially only due to lack of localization and inclusion. That is why Islam et al. (2024) argue that social and institutional barriers are predominant in FEWS, rather than technical ones.

Policy Implications

1. Pre-position relief: District government must pre-position food and non-food stocks at the union council level before June based on new household data verified by Namberdars.
2. Localize warnings: Translating cusec measurements into expected water levels and marking flood maps on village walls in Punjabi/Urdu. Implement the models of citizen science to make sure that data continuity is maintained in case of network outages.
3. Make coordination institutional: Mandatory quarterly pre-monsoon meetings and collective drills between Rescue 1122, District Administration, and Namberdars with clear SOPs on how to distribute relief, including token systems.
4. Establish community literacy: Incorporate flood awareness into schools and conduct annual campaigns prior to monsoon, which Wijaya et al. (2023) demonstrated.

METHOD

The qualitative research design that will be used in this study is the exploratory case study approach to research. The research design will be employed in this study to investigate institutional coordination, early warning communication, and flood response in District Chiniot, Punjab. A qualitative design would be suitable when the objective is to capture perceptions, practices, and challenges in operating the disaster management system in the eyes of the actors directly involved in the disaster management process and not to test pre-defined variables. A case study is an extensively employed method in disaster research to offer context-rich information about complex inter-agency procedures and interactions with the community.

The study was done in flood-impacted villages of Tehsil Lalian, District Chiniot. Chiniot is situated along the Chenab River and is regularly subjected to monsoon floods, with the main ones recorded in Punjabi, 2014, and 2025. The district was chosen because of being highly exposed to riverine floods; the active presence of Rescue 1122 and District Administration; and reported gaps in relief distribution and community awareness amid the existing disaster management structures.

The sample was six Namberdars (village heads) who were purposely selected in the flood-prone Union Councils in Tehsil Lalian. Key informants that were directly involved in coordination of village-level response to floods and communication with government agencies were identified through purposive sampling. Inclusion criteria: (1) currently serving in the position of Namberdar; (2) a minimum of 5 years' experience in the position of Namberdar; and (3) direct experience related to at least one major flood event within the last 15 years. The six-sample size adheres to the recommendations of phenomenological and case-based qualitative studies when data saturation should be met by depth as opposed to breadth.

The data would be collected using semi-structured interviews that would take place face-to-face between March and April 2026( ). Individual interviews took between 30 and 45

minutes and were conducted with the help of an interview protocol created based on the research objectives and the literature on Flood Early Warning Systems (FEWS). The protocol consisted of six themes: (1) Role and Experience of Namberdar, (2) Flood Impact, (3) Early Warning Communication, (4) Institutional Coordination and Response, (5) Community Preparedness, and (6) Recommendations and Insights. Probing questions were applied to obtain detailed accounts, e.g., How do you receive flood warnings: Rescue 1122 or the district government? And were the response efforts timely and sufficient? Interviews were tape-recorded with consent and transcribed word-to-word. Field notes were also made in order to have non-verbal context.

Thematic analysis was used to analyze the transcripts in accordance with the six-phase model of Braun and Clarke. First, to become familiar with data, they were read multiple times. Second, original codes were created deductively based on the research questions and inductively based on the emergent patterns. A qualitative coding framework was created( ) comprising six themes and 18 sub-themes, which include RN1-RN2 (Role and Experience), FI1-FI2 (Flood Impact), EW1-EW3 (Early Warning Communication), IR1-IR3 (Institutional Coordination and Response), CP1-CP2 (Community Preparedness), and RI1-RI3 (Recommendations and Insights). Each of the codes was defined and given examples so that there would be uniformity. Third, codes were sorted into themes; fourth, themes were checked against the data; fifth, themes were defined and labelled; and sixth, results were written up with illustrative quotes. NVivo 14 was employed to handle the coding and make it auditable. Member checking was carried out with two members to increase trustworthiness, and peer debriefing was conducted with a disaster management expert who was not involved in the data collection process.

RESULTS

Participant Characteristics

Table 1 shows participants averaged 17.5 years as Namberdar and all had experienced multiple floods.

Table1: Participant Characteristics

Participant ID	Village	Tenure as Namberdar (Years)	Major Floods Experienced	Interview Duration (min)
N1	Yarakey	22	2013, 2014, 2025	42
N2	Norangewala	15	2014, 2025	38
N3	Bakhashwala	30	2013, 2014, 2015	45
N4	Kot Ameer Shah	8	2025	33
N5	Kalri	18	2013, 2014, 2025	40
N6	Yarekay	12	2014, 2025	35
M	–	17.5	–	38.8

Note. All participants were male Namberdars from flood-prone villages in Tehsil Lalian, District Chiniot.

The table gives the demographic and experience profile of six Namberdars (village heads) who took part in the study, as well as the mean (M) values of the tenure and the interview duration. In general, the data show that the group of participants was rather experienced, with an average tenure of 17.5 years. This implies that the majority of the respondents have a good experience in administrative and community leadership, which can be utilized to comprehend the flood-related governance and response mechanisms on the ground. In terms of individual tenure, there is notable variation across participants. The oldest Namberdar (N3 of Bakhaswala) is 30 years old, and the 22-year-old is N1 of Yarakey. At the bottom end, N4 of Kot

Ameer Shah has been working 8 years, which means that he is in a relatively new position. This range notwithstanding, even the least experienced member of the respondent group has almost a decade of service, which serves to support the overall depth of institutional knowledge among respondents.

On exposure to floods, the majority of participants have encountered several major events of floods, especially those that occurred in the years 2013, 2014, and 2025. N1 and N5 reported having been exposed to all three major floods, whereas N3 reported being exposed to floods in 2013, 2014, and 2015, with slightly different temporal exposure. N4, in contrast, only reported the 2025 flood, which can either be due to geographical variation in the extent of the flood or due to lower tenure. The fact that most participants have been exposed to recurrent floods is an indicator that they are well acquainted with recurrent disaster scenarios and their possible insights into changing response strategies. The average time of the interviews was 38.8 minutes with a range of 33 to 45 minutes, which means that the data collection process was moderately in-depth and consistent. N3 (45 minutes) had the longest tenure, and therefore it is possible that experience is related to the depth of responses. On the other hand, the least experienced participant, N4, was the one interviewed the least (33 minutes). All in all, the relatively equal lengths of the interview would increase the comparability of answers but still allow some variation based on experience and involvement.

Overall, the table represents a healthy mix of Namberdars with a significant amount of experience and exposure to various flood events. This diversity enhances the credibility of the study, as it has included the perspectives of both highly experienced and relatively new local leaders, all of whom have either direct or indirect experience with major flooding incidents.

Thematic Findings

Frequencies of codes are shown in Table 2. It turned out to be a paradox of core: 100% of the participants praised Rescue 1122 (IR-RP, n=6) and the coordination between agencies (IR-CG, n=6), while 100% of the participants reported District Government relief gaps (IR-DG, n=6). It is confirmed by Table 3 that there is co-occurrence between the two. The thematic structure is mapped in figure 1.

Table 2: Frequency of Codes Across Interviews by Theme

Theme	Code	Definition	n	%	Example Quote
1. Role & Experience	RN1_Position	Official duties as Namberdar	6	100	"My duty is to act as bridge between village and tehsil admin."
	RN2_Experience	Experience handling past floods	6	100	"Faced major floods in Punjabi, 2014, and 2025."
2. Flood Impact	FI1_Livelihoods	Damage to houses, crops, income	6	100	"25 kacha houses collapsed, 60 acres of fodder ruined."
	FI2_Challenges	Evacuation at night, no electricity	6	100	"Main challenge was evacuating families at night..."

	FI-VG_Vulnerable	Widows, elderly, tenants, landless most affected	6	100	"Landless farmers and women-headed households suffered most."
3. Early Warning	EW1_Receiving	Warnings via call, SMS, WhatsApp, police	6	100	"Patwari calls me, and Rescue 1122 sends SMS."
	EW2_Disseminating	Mosque loudspeaker, door-to-door	6	100	"I use mosque loudspeaker and door-to-door visits."
	EW-TG_Timeliness	Warning 24–72 hrs prior	6	100	"We got notice 36 hours before."
	EW-CI_Clarity	Technical terms not understood	1	16.7	"3.5 to 10 lakh cusec means nothing to villagers."
	EW-TB_Tech Barrier	Mobile network failure	2	33.3	"Some networks fail during rain, so SMS doesn't reach."
	EW-AG_Awareness Gap	No pre-flood awareness material	4	66.7	"No awareness material in village before flood."
4. Coordination	IR-RP_Rescue Positive	Praises Rescue 1122 evacuation/medical	6	100	"Rescue 1122 came with boats within 6 hours."
	IR-CG_Coord Good	Smooth inter-agency field coordination	6	100	"Coordination was smooth. We gave them local guides."
	IR-DG_DistGovt Gaps	Late food, insufficient, no token system	6	100	"Food packets from District Govt came after 4 days and were not enough."
5. Preparedness	CP-RE_Evac Ready	50–70% ready for evacuation	5	83.3	"We are 70% ready for evacuation, 30% for relief."
	CP-RG_Relief Gap	Lacks grain storage, life jackets	4	66.7	"No proper storage for grain."
	CP-CI_Community	Youth helped with boats, sandbags, langar	6	100	"Youth made volunteer teams per street."
6. Recommendations	RI-FP_Food Preposition	Store food at UC level before monsoon	5	83.3	"Pre-position food at Union Council level."
	RI-AC_Awareness	Pre-monsoon camps, local language	6	100	"District should do awareness camps in schools each May."
	RI-DU_Data Update	Annual update of vulnerable lists	2	33.3	"Update household data every year before monsoon."
	RI-TJ_Joint Training	Quarterly drills: Namberdar +	2	33.3	"Joint training of

	Rescue 1122 + AC	Namberdars + Rescue 1122 staff."

Note. n = number of participants endorsing code. Source: NVivo 14 Coding Summary.

In the table 2, the data of the interview in terms of the themes is presented in a thematic analysis of the data. All the themes are backed by certain codes, their definitions, the number (n), percentage, and illustrative quotes, which give both the quantitative weight and the qualitative depth. Role and experience are the first theme, where all participants (100%) are in agreement about their official duties and previous experiences with flood events. The six respondents discussed their role as a key mediator between the village and the administration and thus their significance in the local government. Likewise, all members stated that they had previous experience with major floods, which also suggests that the sample is well-informed and can reflect on the disaster management practices based on the lived experience.

The second theme, Flood Impact, shows that all participants (100%) reported significant effects on livelihoods, such as house, crop, and income damage. Difficulties in floods, especially difficulties in evacuation during the night time and electricity shortages, were common at all locations. Also, all the respondents noted that vulnerable groups like widows, the elderly, tenants, and landless individuals are disproportionately affected. This consensus highlights both the repetitive and extensive nature of the effects of floods and the social inequalities that predispose people to them.

The third theme, Early Warning, offers a more detailed image. Although all participants (100% of them) confirmed they received warnings via various channels, including but not limited to phone calls, SMS, WhatsApp, and police visits, they identified a number of gaps. Despite the fact that warnings were generally timely (24-72 hours beforehand), one of the respondents (16.7%) expressed concerns with the issue of clarity. The technological barriers, which included mobile network failures, were reported by 33.3% of the participants. More importantly, 66.7 percent noted that there was an awareness gap, which meant that there were no pre-flood educational resources. These results indicate that though the warning system is in place, it cannot be fully effective due to communication and infrastructure issues.

The fourth theme, coordination, has an ambivalent yet overall positive evaluation. The respondents (100%), in their evaluation, highly praised the role of Rescue 1122, especially during evacuation and medical assistance, and indicated that there was smooth coordination between the agencies at the field level. Nevertheless, the district government response, especially their delay in food distributions, inadequate supplies, and the absence of systematic distribution systems (such as token systems), was also unanimously criticized (100%). This comparison shows that operational coordination amongst emergency responders is good, but logistical and administrative support is poor.

The fifth theme, Preparedness, suggests a moderate level of preparedness at the community level. Most of the respondents (83.3%) indicated that they were 50-70% prepared to evacuate, indicating that they were partially prepared but not fully prepared. Nevertheless, 66.7% identified big gaps in relief preparedness such as the absence of grain storage and basic safety equipment such as life jackets. On the positive side, all participants (100 percent) pointed out a strong community involvement, especially the involvement of the youth in organizing volunteer activities like boat assistance, sandbagging, and community kitchens (langar). This is indicative of a high level of social capital regardless of material constraints.

The last theme, Recommendations, provides practical recommendations on how to promote flood management. The biggest number of participants (83.3%) suggested the pre-positioning of food supplies at the Union Council level in advance of the monsoon season. The majority of the respondents (100 percent) pointed out the necessity of awareness campaigns,

which should be conducted in local languages, especially at schools and communities. Fewer participants were proposing to update information on vulnerable populations (33.3%) and hold joint training sessions with Namberdars, Rescue 1122, and administrative representatives (33.3%). These are recommendations that not only focus on the short-term logistical requirements but also on the long-term capacity-building requirements.

Overall, the table indicates that most participants agree on some important issues like roles, flood impacts, and coordination strengths, as well as identify some critical gaps in early warning communication, relief provision, and preparedness resources. The findings highlight the pivotal role of Namberdars in disaster response, the resilience of local communities, and the necessity of enhancing the institutional support and proactive planning.

Table 3: Matrix Coding Query: Co-occurrence of Rescue Positive vs. District Government Gaps

Participant	IR-RP_Rescue_Positive	IR-DG_Distt. Govt_Gaps	Co-occurrence
N1	✓	✓	Yes
N2	✓	✓	Yes
N3	✓	✓	Yes
N4	✓	✓	Yes
N5	✓	✓	Yes
N6	✓	✓	Yes
Total	6/6	6/6	100%

Note. ✓ = Code present. Source: NVivo 14 Matrix Coding Query.

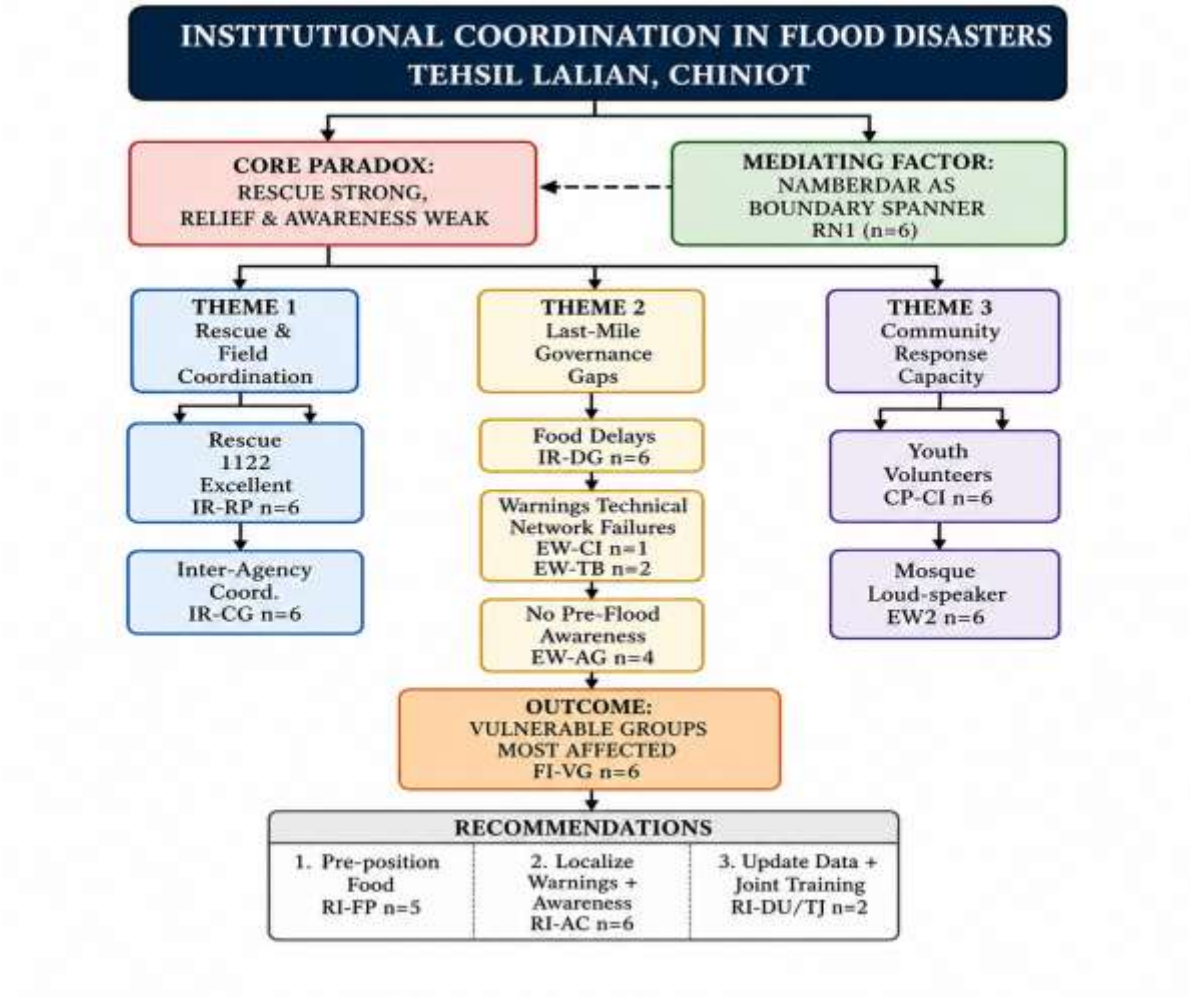
The table indicates that positive perceptions of rescue services (IR-RP_Rescue_Positive) and gaps in district government response (IR-DG_Distt. Govt_Gaps) are completely co-occurring across all six participants. All Namberdars (N1–N6) admitted the positive work of rescue agencies, especially in the evacuation and emergency assistance, and, at the same time, reported the deficiencies in the relief work of the district government. This trend is confirmed by the total row, with 6 out of 6 interviewees (100% participants) reflecting both opinions.

This homogenous co-occurrence points to a clear and consistent narrative amongst the respondents: operational emergency response, particularly by rescue services, is perceived as timely and efficient, whereas administrative and logistical support provided by the district government is viewed as delayed and insufficient. Instead of being contradictory, these findings suggest that participants are to differentiate between various elements of disaster management, appreciating field-level performance and critically evaluating the inefficiencies in institutions.

The trend also reflects a structural disequilibrium in the disaster response systems. Although frontline responders can be effective in immediate life-saving operations, post-rescue operations, including the delivery of food, distribution of resources, and the organization of relief mechanisms, cannot be effectively implemented. The fact that all the participants stated this dual perception reinforces the validity of the finding and suggests the existence of a systemic issue, rather than isolated experiences.

Overall, the table highlights a crucial point: disaster management cannot be effective solely because of the well-developed emergency response mechanisms but because of the equally functional governance and relief delivery systems. This 100% co-occurrence highlights the dire need to fill this gap so that we can have a more comprehensive and balanced disaster response framework.

Figure 1: Thematic Map of Institutional Coordination in Flood Disasters



(Fig. 1)

The figure reveals a central paradox, major themes, mediating factors, and the outcomes of the flood disaster in Tehsil Lalian, Chiniot. The main paradox of the framework is that, although the rescue actions are strong and efficient, the relief provision and awareness mechanisms are weak. This tension is a symptom of an imbalance in disaster management, where disaster management seems to be well-performing during immediate emergency response, but preparedness and post-disaster support are lagging behind.

One important mediating factor found in the model is the role of the Namberdar as a mediating factor (RN1, n=6). This shows that the Namberdar is viewed by all participants as being an important connection that exists between communities and formal institutions. The directional relationship between the two is dashed, indicating that this role partially overcomes the gap between strong rescue operations and weak relief and awareness systems and facilitates coordination and communication across levels.

The framework is further sub-organized into three key themes. One of the themes, Rescue and Field Coordination (Theme 1), demonstrates a consistently positive attitude towards emergency response. All participants (n=6) commended the performance of Rescue 1122 (IR-RP) and reported effective inter-agency coordination (IR-CG). This proves that operational coordination in times of emergencies is effective and well-implemented at the field level.

By contrast, Theme 2, Last-Mile Governance Gaps, represents the most crucial gaps in the system. All respondents (n=6) noted that there

were delays in food distribution (IR-DG), which indicated systemic inefficiencies in the distribution of food. Other problems are technical and network-related problems in early warning communication (EW-CI n=1; EW-TB n=2) and a severe lack of pre-flood awareness programs (EW-AG n=4). These results indicate the existence of structural and communication gaps that can impede effective preparedness and response at the community level.

Community Response Capacity, Theme 3, indicates the strengths of the local communities. All participants (n=6) highlighted the active involvement of youth volunteers (CP-CI) and the use of mosque loudspeakers for disseminating warnings (EW2). This shows good social capital and indigenous coping strategies that have assisted in disaster response even in the face of entirely effective institutional systems.

The result of these interacting factors is quite evident: the most affected ones are vulnerable groups (FI-VG, n=6). This highlights the disproportionate effect of floods as marginalized groups, including women-headed families, the elderly, and the landless, bear the brunt of the floods through lapses in preparedness and distribution of relief.

Lastly, the model ends with three important recommendations. These involve pre-positioning food supplies in the level of the Union Council (RI-FP, n=5); localization of early warnings and intensification of awareness-building efforts (RI-AC, n=6); as well as improving data systems and conducting joint training exercises (RI-DU/TJ, n=2). Collectively, these proposals will resolve short-term logistical deficiencies and long-term capacity-building requirements.

Overall, the figure offers a visual summary of the existence of robust emergency response systems with governance and preparedness gaps mediated by the central role of Namberdars and supported by the resilience of the communities. It emphasizes that a more integrated and balanced disaster management strategy is needed that builds on relief, awareness, and institutional coordination.

DISCUSSION

A qualitative coding framework was used to analyze data collected during semi-structured interviews with six Namberdars in the Tehsil Lalian in the District Chiniot. There were six major themes, namely, Role and Experience, Flood Impact, Early Warning Communication, Institutional Coordination and Response, Community Preparedness, and Recommendations. The results are provided in the following with illustrative quotes [N1-N6] and explained in the context of the literature of 2023-2026.

Role and Experience of Namberdars

All six Namberdars identified themselves as bridges between village and tehsil administration, dealing with matters of revenue, resolving disputes, and providing information on disasters. Experience ranged from 8 to 30 years, covering floods in 1992, Punjabi, 2014, and 2025. This reaffirms the recent FEWS governance studies, which place local leaders as the key bounded spanners, which translate institutional warnings into community action. With the dominant barriers in FEWS being, as Islam et al. (2024) argue, social and institutional, the exclusion of local actors as part of formal protocols undermines the chain between forecast and response. The lengthy history of Namberdars presented an institutional memory of the past of flood management, which is consistent with the findings that local knowledge is necessary to contextualize GIS/RS-based risk maps.

Flood Impact: Community and Livelihoods, Vulnerable Groups

Namberdars noted that there was widespread destruction of kacha houses, standing crops, livestock, and daily-wage labor. The water lasted 3-6 days, resulting in secondary dangers such as snakes and skin disease. All the identified disproportionate effects on widows, the elderly, tenants, or landless laborers, usually because they have no savings or ID cards that exclude them as beneficiaries. These results are in line with the findings of UNDRR & WMO (2023), who explain that the disaggregated vulnerability is the only type that can be effective. Quantitative proof

of Bangladesh has indicated that early warnings can minimize family damages, but susceptible groups are significantly impacted when relief targeting is ineffective (Paul, 2012; Haque et al., 2012). The framing of Namberdars regarding the concomitant crop, housing, and health effects reflects the Punjab Flood Forecasting Division accounts of simultaneous crop, housing, and health impacts.

Early Warning Communication

Receiving warnings: All Namberdars received warnings through various channels: Patwari calls, Rescue 1122 SMS, police announcements, and WhatsApp groups by the AC/DC office. The warnings were usually timely with a lead time of 2472 hours to support the monitoring and forecasting aspect of FEWS. Spreading warnings: The mosque loudspeaker was mentioned as the quickest means, which is complemented by door-to-door visits and youth motorcycle announcements. This portrays community-adapted dissemination, which is a major contributor to the success of FEWS.

Challenges : Although there was timeliness, three gaps occurred: (1) Technical language: SMS/WhatsApp did not work in areas where towers failed in rainy seasons; (2) Network failure: people did not take care of warnings because SMS/WhatsApp did not work in areas where towers failed during rainy seasons; (3) Awareness deficit: people did not pay attention to warnings, and there was no pre-flood material in Punjabi and at schools. These obstacles are reflective of systematic reviews that have found social and cultural barriers to include socio-economic disparities and poor community participation to be limiting EWS implementation (Buytaert et al., 2014). Indonesia (Wijaya et al., 2023) specifically tackles such gaps by providing continuous, understandable, locally owned data flow. In the 2025 Swat tragedy inquiry, the inability to warn in a clear and disseminated manner as systemic issues were also flagged.

Institutional Coordination and Response

Response of agencies: All six Namberdars rated the evacuation and medical response of Rescue 1122 as excellent, quick, and disciplined, with boats arriving in under 6 hours and working day and night. Support was also observed to be given by the army and health department (Kapucu, 2006). Coordination with village leadership, Coordination was described as being strong and smooth, with a common list of affected families and local guides being provided to agencies. This is opposite to the bureaucratic inertia identified by Samansiri et al. (2023) as a critical failure factor, which implies that at the field level in Chiniot, there was active inter-agency coordination as a failure factor during the response.

Performance and gaps: Although the rescue performance was high, all Namberdars reported IR-Distt. Govt-Gaps (n=6). Food packets were received 4 days late, were inadequate, were poorly handled without a token system, or were on outdated lists omitting deserving families. There were no awareness campaigns prior to the monsoon. Such findings are in line with the Pakistan policy reviews that note that the structures exist, but there is still a lack of coordination, resources, and action to disseminate warnings and respond to them (NDMA, 2023). The outcome is a two-tier system: high performance in life-saving evacuation but poor performance in relief governance and risk communication, which is also observed in 2025 Punjab, where real-time monitoring was high but relief governance was low and risk communication was low.

Community Preparedness

Villages reported preparedness to evacuate 50 to 70 percent due to experience and volunteer networks, but only 30 percent were prepared to provide relief due to the absence of grain stores and designated cattle high ground. This is in line with Fernandez-Novoa et al. (2024), who state that to be effective, numerical modeling should be complemented with local preparedness measures. Community participation, Youth assisted with sandbags, boats, and langar; women cooked, and villagers donated tractors and flour (Twigg, 2015). This type of involvement is indicative of the response capabilities component

of FEWS, which stipulates that social groups must be ready to react. However, as Islam et al. (2024) note, lack of inclusive planning limits the sustainability of these ad hoc efforts.

Recommendations and Insights

Namberdars boiled down to four actionable recommendations:

1. Pre-positioning of food at the Union Council level before floods.
2. Pre-monsoon awareness messages in Community and through wall-mounted flood maps, in keeping with Wijaya et al. (2023) on the need to build literacy at a very young age.
3. Revise vulnerable household data every year and disseminate flood maps with Namberdars to fix errors in exclusion identified in FI2 and IR3.
4. Adopt the joint training and monthly meeting of Namberdars, AC office, and Rescue 1122, directly addressing the coordination gaps identified by Samansiri et al. (2023).

They correspond to the UNDRR & WMO (2023) priorities of the early warning of all risks: strengthening risk knowledge, dissemination, and response through inclusive governance. The findings suggest that there is a paradox in flood management in Chiniot: good horizontal coordination exists between Rescue 1122, the army, and Namberdars during evacuation but poor vertical integration between relief/awareness systems of the district government and community needs. This substantiates Calvo-Solano and Quesada-Román (2024) that FEWS effectiveness is viewed through the four components and their interrelationships, and not the accuracy of forecasts. The failures of food delivery and awareness in the last mile are not related to the lack of warnings but are rather a gap in translation, localization, and pre-positioning, the same barriers that have been identified in the case of FEWS governance studies throughout the Global South.

REFERENCE

Alfieri, L., Salamon, P., Pappenberger, F., Wetterhall, F., & Thielen, J. (2012). Operational early warning systems for water-related hazards in Europe. Environmental Science & Policy, 21, 35–49. https://doi.org/10.1016/j.envsci.2012.01.008

Ali, Z. (2025). A comprehensive analysis of community preparedness in Punjab: Assessing communication strategies and natural disaster awareness. Department of Mass Communication, Virtual University of Pakistan.

Ali, Z., Mian, A. H., & Saleem, N. (2025). Impact of social media disaster awareness campaigns of Punjab Disaster Management Authority on flood-affected communities. ACADEMIA International Journal for Social Sciences, 4(4), 3929–3948. https://doi.org/10.63056/ACAD.004.04.1232

Ansell, C., Boin, A., & Keller, A. (2010). Managing transboundary crises: Identifying the building blocks of an effective response system. Journal of Contingencies and Crisis Management, 18(4), 195–207. https://doi.org/10.1111/j.1468-5973.2010.00620.x

Basher, R. (2006). Global early warning systems for natural hazards: Systematic and people-centred. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 364(1845), 2167–2182. https://doi.org/10.1098/rsta.2006.1819

Buytaert, W., Zulkafli, Z., Grainger, S., Acosta, L., Alemie, T. C., Bastiaensen, J., De Bièvre, B., Bhusal, J., Clark, J., Dewulf, A., Foggin, M., Hannah, D. M., Hergarten, C., Isaeva, A., Karpouzoglou, T., Pandeya, B., Paudel, D., Sharma, K., Steenhuis, T., & Zhumanova, M. (2014). Citizen science in hydrology and water resources: Opportunities for knowledge generation, ecosystem service management, and sustainable development. Frontiers in Earth Science, 2, 26. https://doi.org/10.3389/feart.2014.00026

Calvo-Solano, O., & Quesada-Román, A. (2024). Worldwide research trends and networks on flood early warning systems.

Geosciences, 14(6), 137. https://doi.org/10.3390/geosciences13050137

Cools, J., Innocenti, D., & O'Brien, S. (2016). Lessons from flood early warning systems. Environmental Science & Policy, 58, 117–122. https://doi.org/10.1016/j.envsci.2016.01.006

Fernández-Nóvoa, D., González-Cao, J., & García-Feal, O. (2024). Enhancing flood risk management: A comprehensive review on flood early warning systems with emphasis on numerical modeling. Water, 16(10), 1408.

Haque, C. E., Mondal, M. S., & Islam, M. M. (2012). A social analysis of flood hazard management in Bangladesh. Natural Hazards, 64(1), 39–54. https://doi.org/10.1007/s11069-012-0228-y

Islam, M. S., Hossain, M. S., Rahman, M. M., & Haque, A. (2024). Dominant barriers and social injustices in flood early warning systems governance: Insights from topic modeling and content analysis. Frontiers in Climate, 6, Article 1345320. https://doi.org/10.3389/fclim.2024.1345320

Kapucu, N. (2006). Interagency communication networks during emergencies: Boundary spanners in multiagency coordination. American Review of Public Administration, 36(2), 207–225. https://doi.org/10.1177/0275074005280605

Maskrey, A., Murray, V., & Smith, J. (2019). Words into action: Multi-hazard early warning systems. United Nations Office for Disaster Risk Reduction (UNDRR).

National Disaster Management Authority (NDMA). (2023). National disaster management plan Pakistan. Government of Pakistan.

Paul, B. K. (2012). Factors affecting evacuation behavior: The case of Cyclone Sidr, Bangladesh. The Professional Geographer, 64(3), 401–414. https://doi.org/10.1080/00330124.2011.609780

Reuter, C., & Kaufhold, M.-A. (2018). Fifteen years of social media in emergencies: A retrospective review and future directions. Journal of Contingencies and Crisis Management, 26(1), 41–57. https://doi.org/10.1111/1468-5973.12196

Samansiri, S., Fernando, T., & Ingirige, B. (2023). Critical failure factors of flood early warning and response systems (FEWRS): A structured literature review and interpretive structural modelling (ISM) analysis. Geosciences, 13(5), 137.

Sinjari, S., Krymbi, E., Gashi, F., Lloci, D., & Bygjymi, X. (2026). GIS and remote sensing applications in monitoring and risk assessment for flood management: A systematic review with insights from the Western Balkans. International Journal of Ecosystems and Ecology Science, 16(2), 31–36. https://doi.org/10.31407/ijees16.205

The News. (2025, July 12). KP CM approves action against officials over Swat tragedy [Instagram post]. Instagram.

Twigg, J. (2015). Disaster risk reduction. Overseas Development Institute.

United Nations Office for Disaster Risk Reduction (UNDRR). (2023). Early warnings for all initiative. https://www.undrr.org

UNDRR & World Meteorological Organization (WMO). (2023). Early warnings for all: Executive action plan 2023–2027. United Nations.

World Meteorological Organization (WMO). (2018). Multi-hazard early warning systems: A checklist.

World Meteorological Organization (WMO). (2021). Hydromet and climate services in South Asia.

Wijaya, A. P., Setyawan, A., & Hadi, M. P. (2023). Citizen science: Realizing a participatory rain data management for flood disasters early warning systems and building disaster awareness from a very young age. IOP Conference Series: Earth and Environmental Science, 1180, 012045.

https://doi.org/10.1088/1755-1315/1180/1/012045

Zaidi, R. Z., Pelling, M., & Siddiqi, A. (2020). Institutional vulnerability and resilience in Pakistan's disaster risk management system. International Journal of Disaster Risk Reduction, 46, 101492. https://doi.org/10.1016/j.ijdrr.2020.101492